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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/934,248  
Filing Date: August 21, 2001  
Appellant(s): CHOI ET AL.

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Kelly D. Kordzik  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed August 20, 2008 appealing from the Office action mailed February 21, 2008.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

Stewart, D. "A Platform With Six Degrees of Freedom" Proc Instn Mech Engrs 1965-66, Vol 180, Pt 1, No 15, pp.371-378

Hogan, N. "Impedance Control: An Approach to Manipulation" Journal of Dynamic Systems, Measurement, and Control, Vol 107 (March 1985), pp. 1-7

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 3, 38 and 219 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3, 38 and 219 are indefinite as failing to further limit the apparatus in a structural sense. The aspect of subjecting the elongated members to a pre-load constitutes a manipulative step that would limit a process claim but not an apparatus claim.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5, 6, 8, 11-16, 31, 32, 35, 37-42, 45-49, 212-221 and 223-225 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Stewart article entitled "A Platform With Six Degrees of Freedom" in view of the Hogan article "Impedance Control: An Approach to Manipulation".

The primary reference to Stewart discloses an apparatus for positioning an object in at least one plane comprising a holding member—the platform—configured to hold an object—the pilot—and a positioning system including a linkage coupled to the platform defining a first three-axis (flexure) joint thereat, with elongated members—legs—coupling the first joint to a second joint (on the ground, the two-axis joint). Essentially, the article to Stewart fails to teach that the elongated members are made up of a pair of members that move as set forth in the instant claims. The article to Hogan (see Figs. 2a and 3a) shows a manipulating system that would include a linkage that would interact with the environment (page 3, bottom left, last two paragraphs) defining a first joint thereat, the first joint being coupled to a second joint (that against the wall in Fig. 2a) through a plurality (pair, as set forth in instant claim 2) of elongated members and another joint, with the plurality of elongated members being coupled to the another joint to move "at substantially the same rate and in opposite directions to facilitate movement of" the particular environmental interaction desired along first and second transverse axes. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the apparatus of Stewart with the linked, pair of elongated members as taught in Hogan for added flexibility in moving the platform. Concerning instant claim 3, when the structure of Stewart is set up, it would obviously be subjected to a pre-load

of some kind or otherwise the structure could fail during use. Certainly, pre-loading a structure designed to support items is nothing but conventional in the art to ensure that it does not fail upon later usage. The combination as applied would allow for the elongated members to allow rotation through at least a 40 degree range of motion as set forth in instant claims 5 and 6. In fact, it would appear that the combination would allow for a much greater range of motion—possibly around 90 degrees. Given that Stewart shows three legs supporting the platform, it would be logical to provide three linkages as taught in the combination of Stewart and Hogan, and hence instant claim 8 is considered to be obvious in the combination as applied. Stewart uses hydraulic jacks as motive devices coupled to the holding member as required in instant claim 11. Magnetic servomotors (instant claim 12) are conventional in the art and would have been obvious machine elements to replace the hydraulic jacks to facilitate control over the motion of the holding member/platform. Concerning instant claims 13 and 14, it is submitted that such constitutes an intended use that the structure of the prior art would be inherently capable of performing. Hence, while there is no disclosure of using the device of Stewart or Hogan to hold a semiconductor or to be a wafer chuck, one of ordinary skill in the art would have realized that such would have been an obvious use for the structures shown therein given a scaling down in size of the apparatus. The elongated members of the plurality of elongated members are shown in Hogan as having a common length—see Figs. 2a and 3a in the reference. It is submitted obvious that the linkage would be configured as set forth in instant claim 16 to ensure a fluid, accurate motion, given that kinematic singularities would be undesirable motions.

Instant claim 31 is submitted to be obvious over the art as applied generally for reasons of record as already set forth. As already noted, first and second sets of flexure linkages is obvious over the references applied and surely first and second motive devices would also be obvious. Instant claim 212 is also considered to be obvious for reasons already advance. Concerning the dependent claims, claims 32, 214 and 216 would be rejected for reasons already given for claim 15; claim 35 for reasons given for claim 16; claims 38 and 219, the same for claim 3; claims 39-41, 217 and 218, the same as for claim 6—also, for claims 39 and 41, 20 degrees is less than 40 degrees; claim 42, the same as for claim 5; claims 45-47 and 223, the same as for claim 12; claims 48 and 224, the same as for claim 13; claims 49 and 225, the same as for claim 14; and claim 213, the same as for claim 8. The six degrees of freedom imparted to the motion of the platform in Stewart would allow the additional linkages to move the platform along an axis transverse to a first axis as recited in instant claim 215. Finally, the linkage of Hogan would allow the pair of elongated members to rotate at substantially the same rate away from each other as set forth in instant claims 220 and 221 for the first linkage and additional linkage.

#### **(10) Response to Argument**

Appellant submits that the aspect of applying a pre-load to the elongated members is a structural limitation and points out where in the specification it is disclosed. While it may indeed be disclosed in the specification, it is nevertheless

maintained that it fails to further limit the apparatus structurally and constitutes a process limitation that fails to further limit the apparatus.

Concerning the art rejection, appellant is of the opinion that claim 1 requires that the linkage coupled to the holding member be the first joint, and that the first joint is then coupled to a second joint through a plurality of elongated members and a flexure joint. Hence, according to appellant, the joint at the holding member cannot be the flexure joint of Stewart. However, it is respectfully submitted that appellant has interpreted claim 1 in a more specific manner than the claim actually reads or suggests. It is submitted that claim 1 can be read in a broader manner, with a first joint as a flexure joint coupled to a second joint through a plurality of elongated members. Since the first joint is the flexure joint, the aspect of the first joint being coupled to the second joint through the plurality of members and a **flexure joint** would be met—the first joint would be the flexure joint, and hence it would have to connect to the second joint via the plurality of elongated members. Interpreting claim 1 in this manner, it is submitted that the structure of Stewart does indeed “read on” that set forth in claim 1, with the exception of the plurality of elongated members being coupled to the flexure joint—which they would be—to move at substantially the same rate and in opposite directions to facilitate movement of the holding member along the axes noted. The replacement of the hydraulic linkages of Stewart with the linkages of Hogan would facilitate movement of the platform and hence their substitution would have been obvious. The substitution itself would provide for the elongated members to move in the manner stipulated and noted as lacking in Stewart. Again, claim 1 does not specifically require that the



elongated members be coupled directly to the flexure joint. The fact that the joints and elongated members are linked together in some manner is sufficient to encompass the claim language. Claim 3 has been discussed. Again, claims 5 and 6 are submitted to be broader in scope than how appellant is construing them. Elongated members connected to a flexure joint would still be able to rotate, and the claims do not require that the flexure joint be in between the elongated members as appellant apparently believes it does. Concerning claim 12, it is submitted that appellant's assertion that linear servo motors would not replace hydraulic jacks is in error and amounts to mere conjecture. A hydraulic jack moves along a straight --linear-- path and it is unclear why such would not be replaced by a linear servo motor. The aspects of claims 13 and 14 have already been addressed. There is no obvious reason why the structures of the prior art would not have been used to support semiconductors or as wafer chucks, should they be scaled down appropriately. If the hydraulic jacks of Stewart were replaced by the linkages of Hogan, then claim 15 would be met in the combination.

Concerning independent claims 31 and 212, it is believed that these claims have been properly addressed and rejected. While appellant submits that there is language in these claims not found in claim 1, it is believed that any additional language has been addressed. Claim 31 adds a second flexure linkage, something that was already addressed with respect to claim 8. Also, the aspect of two motive devices, one for each linkage, was submitted as obvious. A holding member on a platform would be required in Stewart, since the pilot would have to be in a seat of some kind on the platform. Claim 212 would be rejected for reasons set forth concerning claim 1 and claim 11.

Concerning claim 37, this claim would clearly have been rejected for the same reasons as advanced for claim 31 and claim 1, the latter of which required the axes to be transverse. Also, claim 37 would be rejected for the same reasons as claim 215. It is rather clear that the structure of Stewart alone would allow motion along axes that are transverse to each other.

**(11) Related Proceeding Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Mathieu D. Vargot/

Primary Examiner, Art Unit 1791

Conferees:

/Yogendra N Gupta/

Supervisory Patent Examiner, Art Unit 1791

/Christopher A. Fiorilla/

Chris Fiorilla

Supervisory Patent Examiner, Art Unit 1700